

NOTES ON THE TRIBE CALOSPASTINI, WITH DESCRIPTION OF A NEW SUBGENUS AND SPECIES OF CALOSPASTA

(Meloidae)¹

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With few exceptions each tarsal claw of adult Meloidae consists of two separate, parallel blades. It seems likely that this "cleft" condition serves a function in aiding the beetles to secure a foothold when climbing on vegetation. In what appears to be the primitive condition the blades are nearly equal in size and are smooth. In its more specialized form the dorsal blade has one or two rows of denticles, while the ventral blade is thinner and sometimes shorter than the dorsal one.

In some North American genera the ventral blade is not only shorter than the dorsal one but is solidly fused to it basally, so that the claws appear to have a ventral tooth (Plate I, fig. 3). Since the line of fusion is visible in most species, there can be little doubt that the tooth is homologous to the ventral blade of the more primitive claw. In most genera the ventral tooth is elongate and nearly parallel to the dorsal blade. In *Megetra*, *Cysteodemus*, and *Tegrodera* it is short and divergent.

The fused condition of the tarsal claw was used by Van Dyke (1928) in characterizing the tribe Calospastini. As defined by him the tribe is a good phyletic group, but it now appears that this condition of the tarsal claws is not unique to it, since two species having fused blades and previously assigned to the genus *Calospasta* actually belong in the tribe Lyttini, where they are congeneric with *Lytta vesicatoria* (Linnaeus).

These two species, *Lytta moesta* (Horn), NEW COMBINATION, and *Lytta morrisoni* (Horn), NEW COMBINATION, differ from the Calospastini in having moniliform, rather loosely articulated antennal segments. In addition, the males have the intermediate antennal segments slightly incrassate, a condition not found in the Calospastini but present in many species of *Lytta*. Finally, both species are larger than most species of *Calospasta* and are so *Lytta*-like in general appearance that specimens have almost invariably been identified as species of *Lytta* in collections. It is only by examining the tarsal claws that one would suspect that the species might have been described in the genus *Calospasta*. *Lytta funerea* (Fall) shows an approach to this condition in having the

¹This paper is a joint contribution of the Section of Faunistic Surveys and Insect Identification, Illinois Natural History Survey, and the Department of Entomology, University of Illinois.

ventral blade of the tarsal claws definitely shorter than the dorsal one, although it is not fused to it.

It is possible that *L. morrisoni* and *L. moesta* represent a phyletic line ancestral to the Calospastini. However, until more evidence is obtained I prefer to consider that the fusion of the tarsal claw blades has taken place independently in the Calospastini and in *Lytta* and to retain tribal status for *Calospasta* and its allies.

The combination of filiform, closely articulated antennal segments, sharply curved second A_3 vein, and fused tarsal claw blades will suffice to distinguish members of the tribe Calospastini from the Lyttini, although none of these characters is distinctive when applied singly. Further work, especially larval studies, will undoubtedly disclose additional characters to distinguish the two groups.

Within the tribe Calospastini the monotypic genus *Eupompha* LeConte, erected for *E. fissiceps* LeConte, has been distinguished from other genera on the basis of certain strongly developed secondary sexual characters of the male head and fore tarsi. Actually, *E. fissiceps* is nothing more than a highly modified *Calospasta*. The characters used to separate it are found in various stages of development in several species of the latter genus, including the genotype, *C. elegans* (LeConte).

A few species of *Calospasta*, as *C. viridis*, have the head and fore tarsi of the male unmodified. In *C. elegans* the first segment of the fore tarsi is swollen in the male, while the second to fourth segments are very slightly enlarged. All segments are normally pubescent dorsally. The head of the male has the frontal region swollen, with a rather broad impression along the midline. In *C. histrionica* the head of the male is similar to that of *C. elegans*, but the first three fore tarsal segments are swollen and glabrous dorsally, with the first segment sulcate dorsally and the second and third segments with an indication of a sulcation. The fourth segment is only slightly swollen.

Passing next to *C. sulcifrons* we find that the head of the male is strongly swollen and deeply impressed from the clypeus to near the occiput. The first four segments of the male fore tarsi are glabrous dorsally and more strongly swollen than in *C. histrionica*, although not sulcate. Finally, in *E. fissiceps* the male fore tarsi are very much like those of *C. histrionica* but more distinctly sulcate dorsally and more strongly swollen. The head is similar to that of *C. sulcifrons*, except that the impression is deeper and narrower and extends to the occiput. On the basis of these data and the lack of any other characters to justify its separation, I consider *Eupompha* as a synonym of *Calospasta*. *Eupompha fissi-*

ceps LeConte then becomes *Calospasta fissiceps* (LeConte), NEW COMBINATION.

With the above changes I now regard the genus *Calospasta* as containing the following species: *C. decolorata* Horn, *C. edmundsi* Selander, *C. elegans* (LeConte), *C. fissiceps* (LeConte), *C. fulleri* Horn, *C. histrionica* Horn, *C. imperialis* Wellman, *C. macswaini*, n. sp., *C. nemognathoides* Horn, *C. schwarzi* Wellman, *C. sulcifrons* Champion, *C. viridis* Horn, and *C. wenzeli* Skinner.

In two of these species a peculiar condition of the tarsal claws has been found. Thus in *C. nemognathoides* and *C. macswaini* a long, heavy, somewhat spatulate process arises from the base of the ventral tooth and extends parallel to the outer surface of each claw (Plate I, fig. 3). Apparently these processes are immovable; I propose to call them unguual spines.

An examination of all species except *Calospasta fulleri* and *C. decolorata* has failed to disclose the presence of unguual spines in any other members of the tribe Calospastini. Furthermore, they apparently have not been reported for any other Meloidae. It is probable that the spines developed in the Calospastini after the fusion of the ventral blade and that they now serve the same function as that structure does in its free condition in other Meloidae.

Primarily on the basis of the possession of these unguual spines I propose to separate *C. nemognathoides* and *C. macswaini* from the rest of the members of the genus *Calospasta* as follows:

SPASTONYX, new subgenus

Unguual spines present on tarsal claws. Fore tarsal segments of male neither swollen nor dorsally glabrous. Head not swollen, lacking longitudinal furrow or broad impression on vertex and frons. Lateral lobes of male genitalia with a large lightly sclerotized area surrounded entirely by darker, more heavily sclerotized cuticle. Colors not metallic.

Genotype: *Calospasta nemognathoides* Horn, by present designation.

KEY TO SPECIES

- Distal antennal segments one and two-thirds as long as broad; elytral pubescence confined almost entirely to sides and apex; unguual spines hardly surpassing apex of ventral tooth; male genitalia as in Plate I, fig. 4; female genitalia with styli two and three-fifths times as long as broad..... *nemognathoides* Horn
- Distal antennal segments twice as long as broad; elytral pubescence more conspicuous, evenly distributed; unguual spines surpassing apex of ventral tooth by almost half their length; male genitalia as in Plate I, fig. 8; female genitalia with styli three and one-half times as long as broad *macswaini*, n. sp.

In most of the specimens of the two species examined some of the unguual spines are broken off near the base.

Calospasta (Spastonyx) nemognathoides Horn
(Plate I, figs. 1-6)

Calospasta nemognathoides Horn, 1870, 3:92; Horn, 1878, 7:60 (in key); Horn, 1891, 29:102; Wellman, 1909, 20:24.

Brownish black. Head black or brownish black. Prothorax orange. Pubescence dark. Length: 7.5-9 mm.

Male: Head as broad as long, one and one-tenth times as broad as pronotum (Plate I, fig. 2). Sides weakly divergent dorsad of eyes, rather suddenly rounded at tempora, which are well marked. Frons with three shallow, subcontinuous impressions between eyes. Midline finely impressed on vertex. Surface of vertex and frons smooth, shiny, very sparsely and minutely punctate, glabrous (actually with a few very minute, erect setae visible under high magnification). Antennae reaching beyond middle of pronotum, twice as long as pronotum. Third to tenth segments filiform, closely articulated. Distal segments slightly longer and broader than basal segments, one and two-thirds as long as broad. Eleventh about one and one-third times as long as tenth.

Pronotum subcampanulate, as broad to nearly one and one-tenth times as broad as long, broadest at middle. Sides much more strongly convergent apically than basally. Disk very evenly convex, smooth, shiny, nearly impunctate, glabrous; midline not impressed. Elytra moderately shiny, irregularly rugose, with a few short, scattered setae confined almost entirely to sides and apex. Wings colorless. Vein R_1 brown, except basally; rest of veins yellow; vertical vein bowed toward wing base.

Lateral hind tibial spurs moderately robust, expanded at apex, obliquely truncate; mesal spurs shorter, slender, spiniform, one-third to one-half as broad as lateral spurs (Plate I, fig. 6). Fore tarsi with pads a little larger than on rest of tarsi. Tarsal pads sericeous, except on first segment of hind tarsi, which is entirely dark-pubescent. Tarsal claws long, slender, the ventral tooth three-fourths to four-fifths as long as dorsal blade. Ungual spines hardly surpassing apex of ventral tooth (Plate I, fig. 3).

Thoracic sternum and abdomen very sparsely and even more minutely punctate than vertex, clothed with short, subrecumbent, fine setae. Fifth visible abdominal sternite moderately deeply, semicircularly emarginate. Sixth (Plate I, fig. 1) cup-like, appearing obliquely truncate in lateral aspect, with a deep, rather narrow, V-shaped emargination; a broad area

along emargination lightly pigmented; lateral lobes densely clothed with rather long pubescence.

Genitalia as in Plate I, fig. 4. Lateral lobes very acute at apex. Median lobe with two ventral hooks of similar size. Ninth sternite as in Plate I, fig. 5.

Female: Fore tarsal pads not larger than rest. Fifth visible abdominal sternite entire. Sixth not cup-like, truncate, lacking lightly pigmented area. Styli of genitalia two and three-fifths times as long as broad.

Recorded Distribution: CALIFORNIA: Owens Valley (type locality). ARIZONA: "near Fort Yuma."

Specimens Examined: ARIZONA: Andreas Bolter Collection (Illinois Natural History Survey), 2 males, 5 females; Phoenix, 1892-1907, R. E. Kunze (British Museum (Natural History)), 1 male, 2 females. CALIFORNIA: 1000 Palms, April 10, 1937, G. C. Varby (British Museum (Natural History)), 1 female.

The color pattern and rather broad pronotum give this species a superficial resemblance to some species of *Nemognatha*, as noted by Horn. The specimens examined are much larger than those of *C. macswaini*, but measurements given by Horn (1891) (5.5-8 mm.) and Wellman (5.4 mm.) for *C. nemognathoides* indicate that there is an overlap in length of the two species.

Calospasta (Spastonyx) macswaini, n. sp.

Plate I, figs. 7-9

Similar to *C. nemognathoides*, except as follows:

Brownish black. Head and prothorax orange or brownish orange, the head darker and either unicolorous or suffused with piceous on vertex, or head and pronotum brownish black. Antennae, mouthparts, tibiae, tarsi, and sometimes apex of femora fulvous. Pubescence pale. Length: 4.5-5.5 mm.

Head about one and one-tenth times as broad as long, one and one-fourth to one and one-third times as broad as pronotum, broadest across eyes. Sides from eyes rounded smoothly into tempora, which are subsequently not well defined. Frons flat or with a small, shallow impression on each side near eyes. Midline not impressed on vertex. Vertex and frons very sparsely clothed with short, suberect, much more conspicuous setae. Antennae narrower. Distal segments twice as long as broad. Eleventh one and two-fifths times as long as tenth.

Pronotum in one specimen with a shallow fovea on each side behind middle. Elytra clothed with longer setae, which are regularly distrib-

uted over surface and much more conspicuous. Wing veins entirely yellow.

Fore tarsal pads not larger than rest. Tarsal pads sericeous on all segments, not as well differentiated, the setae longer and sparser. Ventral tooth of tarsal claws not more than three-fourths as long as upper blade, generally about one-half as long. Ungual spines surpassing apex of ventral tooth by almost half their length.

Fifth visible abdominal sternite a little less deeply emarginate in male. Sixth not as strongly cupped, moderately deeply, semicircularly emarginate in male (Plate I, fig. 7).

Male genitalia as in Plate I, fig. 8. Lateral lobes less acute. Median lobe with a single, well developed ventral hook at apex, the subapical hook obsolescent. Ninth sternite of male as in Plate I, fig. 9. Female genitalia with styli three and one-half times as long as broad.

Holotype male and 3 *paratype* females: Yuma, ARIZONA, March 26, 1940, R. H. Crandall. *Allotype* female and *paratype* male: Same data, but March 27, 1940. *Holotype* and *allotype* (in alcohol and on slides Nos. 404-406 (RBS)) deposited in the collection of the California Academy of Sciences, *paratypes* in the collections of the University of Arizona and R. B. Selander.

This is the smallest species of *Calospasta* known and one of the smallest of any of the Meloidae. As indicated above, it is closely related to *C. nemognathoides*. It can best be distinguished from the latter by the characters given in the key.

It is with pleasure that I name this species in honor of J. W. MacSwain, who has contributed much to our knowledge of the Meloidae. Dr. MacSwain independently recognized it as undescribed and graciously made specimens in his possession, from the California Academy of Sciences, available to me. I want to express my appreciation also to L. A. Carruth for the loan of specimens from the University of Arizona collection and to E. B. Britton for specimens of *C. nemognathoides* from the British Museum (Natural History).

Explanation of Plate I

Figs. 1-6. *Calospasta nemognathoides* Horn, ♂

Fig. 1. Sixth visible abdominal sternite: a. caudal aspect; b. ventral aspect; c. sinistral aspect. Fig. 2. Head (antennae omitted). Fig. 3. Hind tarsal claws. Fig. 4 Genitalia: a. tegmen, ventral aspect; b. median lobe, lateral aspect. Fig. 5. Ninth abdominal sternite. Fig. 6. Hind tibial spurs, mesal aspect.

Figs. 7-9. *Calospasta macswaini*, n. sp., holotype ♂

Fig. 7. Sixth visible abdominal sternite, ventral aspect. Fig. 8. Genitalia: a. tegmen, ventral aspect; b. tegmen, lateral aspect; c. median lobe, lateral aspect. Fig. 9. Ninth abdominal sternite.

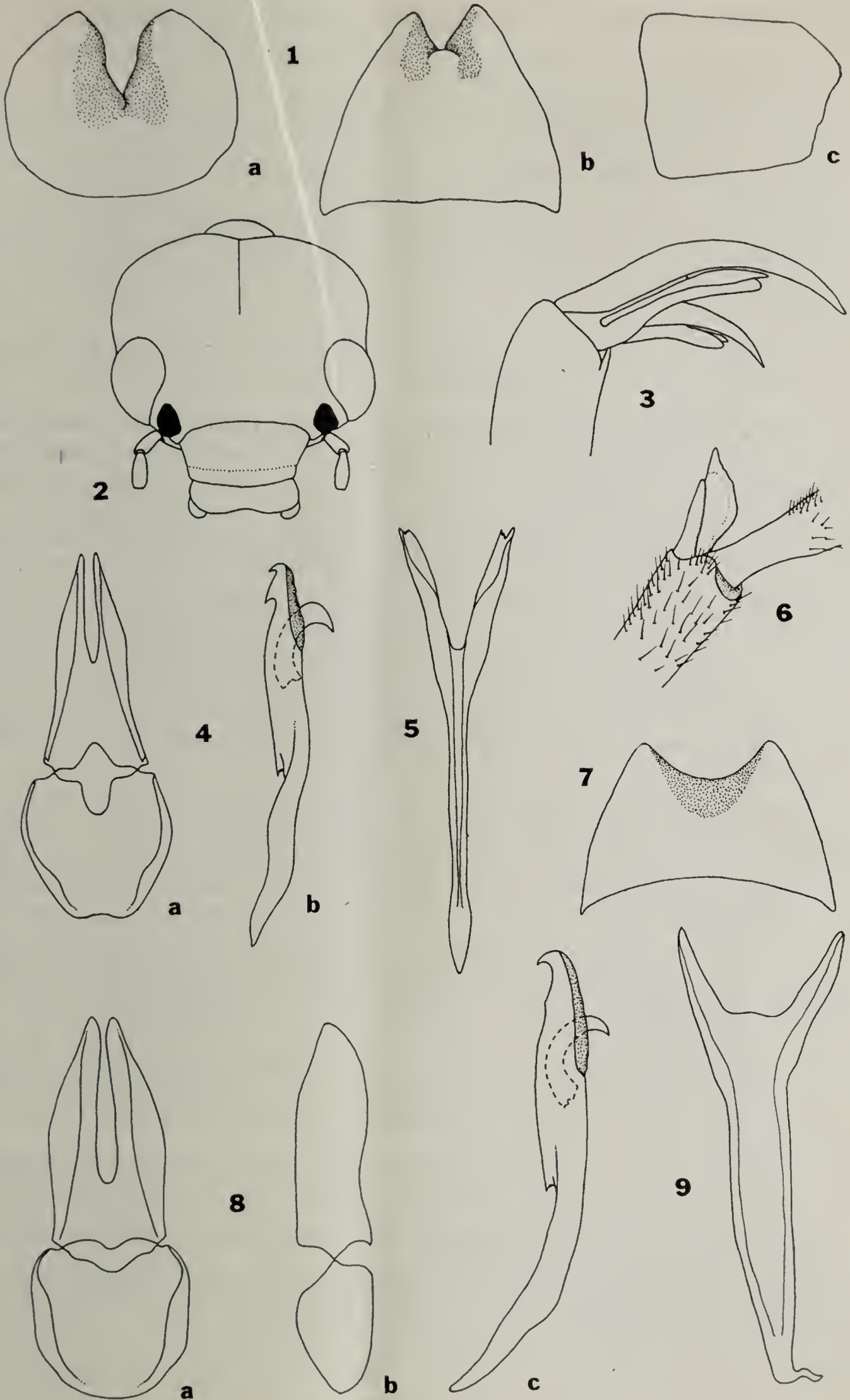


PLATE I. *Calospastini*.

LITERATURE CITED

- HORN, G. H. 1870. Contributions to the coleopterology of the United States. Trans. American Ent. Soc., vol. 3, pp. 69-97.
- . 1878. Contributions to the coleopterology of the United States, No. 2. *Ibid.*, vol. 7, pp. 51-60.
- . 1891. Notes on *Calospasta* Lec. Proc. American Philos. Soc., vol. 29, pp. 99-102.
- VAN DYKE, E. C. 1928. A reclassification of the genera of North American Meloidae (Coleoptera). . . Univ. California Publ. Ent., vol. 4, pp. 395-474, pls. 15-19.
- WELLMAN, F. C. 1909. A revision of the genus *Calospasta* LeConte. Ent. News, vol. 20, pp. 19-25.

OCCURRENCE OF PUPAE OF *ALTICA TOMBACINA* MANN. UNDER BARK IN
BRITISH COLUMBIA

In August, 1953, I had an opportunity to collect insects in the mountainous country north of Squamish, British Columbia. I had torn a large section of loose bark three inches thick from a Douglas fir log and was surprised to see numerous yellow chrysomelid pupae scattered over the sawdust-like surface. The pupae were resting on a thick bed of moist, coarse, chewed wood that had accumulated from the excavations of many large wood-boring larvae. I thought that possibly the pupae were those of the leaf beetle that is common on fireweed, *Epilobium angustifolium* (L.), in the area. There were hundreds of plants of this species a short distance from the log, and their leaves had been noticeably chewed by beetle larvae. Several days later my supposition proved to be correct. Pupae which I had placed on top of the sawdust-like material in a glass-topped tin matured to the adults of the flea beetle *Altica tombacina* Mann. (= *evicta* Lec.).

In my collecting experience I had not seen chrysomelid pupae under bark before. The literature on the habits of chrysomelid larvae does not reveal a parallel case. Packard,¹ referring to the alder flea beetle (*Haltica alni* Harris), stated, "It is evident that in nature the larva falls to the ground to transform, the pupae entering the ground." Woods² wrote concerning three species of *Altica* in Maine, "When full grown, the larvae enter the ground where they transform . . .," and further concerning a fourth species, "The larvae when full fed enter the ground to pupate." These references demonstrate the usual habits of *Altica* larvae and pupae.

It is likely that the larvae were forced to wander away from the unsuitable dry sandy soil below their host plants and found a favorable medium to pupate on the moist layer of chewed wood, well protected from drying by the thick layer of bark.

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¹Packard, A. S. 1890. Fifth report of the United States Entomological Commission. U. S. Dept. Agr., Washington.

²Woods, W. C. 1918. The biology of Maine species of *Altica*. Maine Agr. Expt. Sta. Bull. 273, pp. 149-204.